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IAN C. McLEOD, P.C. 2190 COMMONS PARKWAY OKEMOS, MI 48864			THAKUR, VIREN A	
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			1794	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/679,714

Applicant(s)

AWAD, AZIZ CHAFIC

Examiner

VIREN THAKUR

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-14 and 16-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-14 and 16-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. As a result of the cancellation of subject matter from the claims, the rejection under 35 U.S.C. 112, first paragraph of claims 1-2, 4, 6-14, 16-29 for the limitation "at least one of a food grade acid or an alkali metal hydroxide"; the limitation "by introducing water to remove residues on the uncooked processed food from the fermentation through the outlet strainer" and the limitation "a fluid aqueous medium" have been withdrawn.
2. As a result of the amendments to the claims, the rejection of claim 4 under 35 U.S.C. 112, second paragraph for the limitation "wherein the aqueous medium for the fermentation is at a temperature between 10°C and 40°C and a pH between about 4 and 5," has been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-2, 8-10, 13-14 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hilton et al. (US 4140801) in view of Christ et al. (US 4242361), "Yeast Growth Medium", "Catalogue of Bacteria & Bacteriophages", Champagnat (US 3193390), Lund (Detection of Microorganisms in Food), "Yeast Media, Solutions and Stocks", Green et al. (US 3891771), Annuk et al. (US 5316776) and Sokolsky (US 1676166) and in further view of Hopkins (US 4341802), Young et al. (US 3886046) and Pinnegar (US 3425839), for the reasons given in the previous Office Action, mailed December 30, 2008.**

Regarding the new limitation of "the aqueous medium contains the uncooked processed food" it is noted that Hilton et al. already teach employing an aqueous medium comprising a microorganism for the purpose of fermenting and thus consuming the reducing sugar content within the starch based food (i.e. the potato) for the purpose of controlling the Maillard reaction when frying the thus formed potato products. Nevertheless, as discussed in the previous Office Action, mailed December 30, 2008, both Hopkins and Young et al. teach that it was advantageous to recirculate the

aqueous medium since the resulting liquor formed during the fermentation comprises the nutrients that can be recycled back into the fermentation to support additional microorganism growth. Although the references to Hopkins, Young et al. and Pinnegar might not directly teach using this recirculation of the aqueous medium for potatoes, it is noted that these references have been relied on to teach providing a recirculation of the aqueous medium for the advantages of improving the fermentation rate. In light of this, to therefore achieve the advantage of improving the fermentation rate, by recirculating the aqueous medium would have been obvious to one having ordinary skill in the art. Additionally, it is noted that Christ et al. also teaches the concept of recirculating a fermentation medium, wherein the medium can be recirculated over any vegetable material (column 3, lines 9-12). Since Hilton et al. teaches using yeast fermentation, for instance, for lowering the reducing sugar content of a starched based processed food, such as a potato, and since Christ et al. teaches recirculating the fermentation medium for the purpose of ensuring complete contact of the product to be fermented with the fermentation medium, to therefore employ an aqueous medium into which the food product is placed would have been obvious to one having ordinary skill in the art, for the purpose of ensuring complete contact between the fermentation medium and the product to be fermented. Nevertheless, Hopkins, Young et al. and Pinnegar teach the added advantage of improving the fermentation rate by employing a recirculation of the aqueous medium. Thus, it is noted that applicant is not the first to recirculate a fermentation medium and the art teaches employing this process for fermenting various types of foodstuffs, as taught by Christ and as further evidenced by Hopkins, Young and

Pinnegar. Since Hilton also teaches fermenting a vegetable material to remove the reducing sugars, to therefore employ a recirculation type process would have been obvious to the ordinary skilled artisan for the purpose of achieving the art recognized advantage of complete contact and improved fermentation rates.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-2, 8-10, 13-14 and 17-19, above and in further view of Greup et al. (US 4348417).

Claim 6 newly recites that the uncooked processed food comprises potatoes and comprises frying the uncooked processed food without drying the uncooked processed food, after fermenting and before drying.

It is noted that Hilton et al. teaches the step of drying solely for the purpose of producing dehydrated potato flakes that are subsequently shaped into potato chips and French fries, for instance. The secondary function of drying is to achieve a desired moisture content for achieving the desired organoleptic properties when frying. Additionally, since Hilton et al. is making dehydrated flakes, the added purpose of drying is to make the dehydrated flakes that are subsequently packaged and can be reconstituted using water and then shaped into potato chips and French fries, for instance (column 6, lines 36-40 and lines 46-50). Therefore, whether the ordinarily skilled artisan chose to forgo drying the product after fermentation but before frying would have been an obvious result effective variable routinely determinable by experimentation, depending on the particular organoleptic properties desired to be

imparted to the uncooked processed potato when frying and depending on whether the treated potato product was intended to be packaged in a dehydrated state or immediately cooked. Nevertheless, Greup teaches a similar product as that taught by Hilton et al. in that both Greup and Hilton teach that the fermented potato product can be formed into a particular shape and subsequently cooked by frying or baking, for instance (column 2, lines 6-17). To therefore employ the conventional step of frying after fermenting without drying would have been obvious to one having ordinary skill in the art if it was desired to immediately shape and cook the potato products as opposed to storing in a dehydrated state.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-2, 8-10, 13-14 and 17-19, above, and in further view of Gimmler (US 6001409), Sunderland (US 5558898) and in further view of Baldwin (US 2744017), Mottram et al. ("Acrylamide is formed in the Maillard Reaction") and Elder et al. (US 20040058054).

Claim 7 newly recites the limitations that the uncooked processed food is selected from the group consisting of cereal meals and corn meals and that the uncooked processed food is dried after fermenting and before the step of cooking and wherein the cooking step is baking.

It is noted that Gimmler teaches that a conventional process for making corn meal based products, such as tortilla chips is to form a mass which is shaped, dried and subsequently cooked (column 16, lines 1-41). In this case, Gimmler teaches toasting as

the drying step since it has also been used to reduce the moisture content. Gimmler teaches using corn meal and corn flour (column 8, line 62 to column 9, line 35).

Additionally, Sunderland teaches that masa flour, which is made using corn has been conventionally used to make tortilla chips and taco shells.(column 1, lines 22-25) and further comprises reducing sugars (column 6, footnote 3, below the table).

Nevertheless, since Hilton et al. similarly teaches that the final treated product can be shaped into a particular shape before cooking and also teaches using fermentation to reduce the levels of reducing sugars in the food product so as to reduce the browning of the cooked product, to substitute one conventional starch based food comprising reducing sugars for another conventional starch based food also comprising reducing sugars, for the purpose of controlling/reducing the browning in the other starch based product would have been an obvious matter of choice and/or design.

It is noted that the art has well established that browning results from this reaction process, as further evidenced by Baldwin, on column 1, lines 32-34. Baldwin even further recognized on column 1, lines 39-45 that fermentation to consume the reducing sugars was a method for reducing this browning reaction. Therefore, by removing one of the reactants in the Maillard browning reaction, such as the reducing sugars, one would also have been reducing the ability of the reaction to produce acrylamide. Additionally, the art already recognized that the Maillard reaction which has already been linked to browning is also responsible for the formation of acrylamide. Mottram et al. has been relied on as further evidence that the Maillard reaction, which the art has recognized results in the browning of food products, also has been

recognized as the mechanism for forming acrylamide. It is even further noted that Elder et al. teaches that the art had also recognized various starch based foods comprise the components that result in browning, including corn products, potato chips and crackers (paragraph 0004, 0007-0009). Although Elder appears to employ a different process for reducing acrylamide formation, Elder also teaches a fermentation process (paragraph 0011) but has been primarily relied on to teach the particular type of products that can form acrylamide as a result of the amino acid and reducing sugar content therein. To therefore reduce one of the reactants in the Maillard reaction by fermentation to reduce browning when cooking, as taught by Hilton et al., for instance, one would also be reducing the potential for the formation of acrylamide when cooking the product. Once the art recognized reducing browning by fermenting to lower the reducing sugar content, the particular food comprising reducing sugars that was fermented for this same purpose would have been obvious to one having ordinary skill in the art, for the same purpose of controlling the browning of the product when cooking.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as begin unpatentable over the references as applied to claims 1-2, 8-10, 12, 14 and 17-19, above, and in further view of Goering et al. (US 4428967), for the reasons given in the previous Office Action, mailed December 30, 2008.

9. Claims 4, 11, 12, 16 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-2, 8-10, 13-14 and 17-19, above, and in further view of Hagiwara (US 4298620), Bechtle (US 3818109), "Fermented Fruits and Vegetables", Baldwin (US 2744017), applicant's admission of the prior art and "Lactic Acid Bacteria" for the reasons given in the previous Office Action mailed December 30, 2008 and in further view of "Yeast Fermentation" and "How To Restart a Stuck Fermentation"

Claim 4 newly recites that the pH at the end of the fermentation the aqueous medium for the fermentation has a pH of between about 4 and 5. Hagiwara teaches that in using lactic acid bacteria, a pH of between about 4 and 6 is optimal for initiating the fermentation (column 4, lines 53-60). Hagiwara further teaches that when employing lactic acid bacteria, the pH of the fermentation medium is about 4 (column 4, line 58). Hagiwara thus provides further evidence of the conventionality of the aqueous medium to be acidic such as at a pH of 4, when using lactic acid bacteria, since the result of lactic acid bacterial fermentation is the product of lactic acid, a low pH substance. This is further evidenced by "Lactic Acid Bacteria" who teach that lactic acid bacteria produce lactic acid, which results in the pH dropping to as low as 4 (see background, third paragraph). Therefore, when employing lactic acid, the particular pH of the fermentation medium, at the beginning, during and even the end of the fermentation would have been an obvious result effective variable, routinely determinable by experimentation for the purpose of achieving the desired fermentation. Nevertheless, Hagiwara teaches that lactic acid bacteria optimally perform at a pH of 4

to 6 and result in the pH of the medium being 4 at the end of the fermentation. To therefore maintain this pH would have been obvious to one having ordinary skill in the art for the purpose of controlling the fermentation rate of the bacteria. Additionally, it is noted that YeastFermentation has been relied on as further evidence that the pH is controlled at pH 5 for the purpose of ensuring optimum yeast growth. "How to Restart a Stuck Fermentation" also evidences that in order to achieve optimum fermentation, the pH of the fermentation medium should be controlled to a desired degree. This reference teaches a pH for yeast fermentation of between 3.5-5.5 (page 1). Therefore, when employing organisms such as yeast, the art also recognized controlling the pH throughout the fermentation for the purpose of achieving optimal yeast growth and fermentation. Obviously, the references relied on teach that the pH varies depending on the particular strain of fermenting bacteria/organism and the desired rate of fermentation. Nevertheless, to employ an optimal pH as taught by the references would have been obvious and within the skill of one having ordinary skill in the art, as an obvious result effective variable for achieving the desired fermentation.

Claim 20 newly recites those limitations that are also recited in claim 1 and thus are rejected for the reasons given with respect to claim 1.

10. Claims 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-2, 8-10, 13-14 and 17-19, above, and in further view of Amrein ("Potential of Acrylamide Formation, Sugars, and Free

Asparagine in Potatoes: A comparison of Cultivars and Farming Systems"), for the reasons given in the previous Office Action, mailed December 30, 2008.

Regarding the new limitations to claims 28 and 29, these limitations were similarly added to claim 1 and thus those limitations of claims 28 and 29 are rejected for the reasons given with respect to claim 1. Regarding the limitations to claims 26, 27, 28, 29, 30 and 31, of the particular amount of glucose, fructose, sucrose, maltose and lactose levels in the potato prior to fermentation being less than 0.1 wt%, it is noted that Amrein has still only been relied on as evidence of a fact that potatoes such as those used by Amrein have reducing sugar levels within applicants' claimed range. Although applicant may have conceived and reduced to practice the claimed invention, those cultivars of potatoes taught by Amrein were not invented by Amrein but were merely studied by Amrein. For instance, on page 5558 right column, Amrein discusses other references which also disclose that the levels of reducing sugars vary across various potato cultivates. The disclosure relied on in the Amrein reference simply evidences the fact that various cultivars of potatoes have reducing sugar content within applicant's claimed range. That is, in certain circumstances, references cited to show a universal fact need not be available as prior art before applicant's filing date. (See MPEP 2124). Additionally, it is noted that applicant is not the inventor of the particular cultivar that is employed, as disclosed in applicant's specification (Wisconsin 123). Therefore, once the art recognized that the sugars in the potatoes can be reduced and thus the browning upon frying can be controlled as a result of a fermentation using

microorganisms such as yeast, the particular conventional potatoes that one chose to treat would therefore have been an obvious matter of choice and/or design.

11. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 26-31, above, and in further view of Baldwin (US 2744017), Mottram et al. ("Acrylamide is formed in the Maillard Reaction"), and Elder et al. (US 20040058054).

Regarding new claims 32-34, which recite the particular percentage reduction in acrylamide, it is noted that the Maillard reaction which is the reaction of reducing sugars with amino acids present in the food that react when heated to a particular degree, has been a well known reaction in the art, which results in the browning of the heated food products by the reaction of reducing sugars with amino acids under a particular degree of heat. The art has well established that browning results from this reaction process, as further evidenced by Baldwin, on column 1, lines 32-34. Baldwin even further recognized on column 1, lines 39-45 that fermentation to consume the reducing sugars was a method for reducing this browning reaction. To therefore employ fermentation to consume the reducing sugars present in the food product, for the purpose of preventing or reducing the Maillard reaction has been conventional in the art. Since the art recognized that the Maillard reaction has also been linked to the formation of acrylamide, to therefore consume one of the reactants in the Maillard reaction would also have resulted in the reduction in the formation of acrylamide. In any case, Mottram et al. has been relied on as further evidence that the Maillard reaction, which the art has

recognized results in the browning of food products, also has been recognized as the mechanism for forming acrylamide. Additionally, Elder et al. teaches that the art had also recognized various starch based foods comprise the components that result in browning, including corn products, potato chips and crackers (paragraph 0004, 0007-0009). Although Elder appears to employ a different process for reducing acrylamide formation, Elder also teaches a fermentation process (paragraph 0011) but has been primarily relied on to teach the particular type of products that can form acrylamide as a result of the amino acid and reducing sugar content therein. Therefore, once the art recognized that the Maillard reaction also results in acrylamide formation and once the art recognized consuming one of the reactants in the Maillard reaction to prevent the reaction from occurring, such as by using fermentation to consume the reducing sugars for reduce the Maillard reaction browning, the particular degree of reduction of the Maillard reaction/browning/acrylamide formation, as a result of the degree that one of the reactants can be removed would have been an obvious result effective variable, routinely optimized by experimentation.

Response to Arguments

12. On page 12 of the response, applicant urges that the combination does not disclose, teach or suggest the use of an aqueous medium which contains the uncooked processed food and further urges regarding Hilton et al. that the addition of a small

amount of an aqueous mixture to an uncooked processed food does not satisfy the claim limitation.

This argument has been considered but is not persuasive. It is noted, as discussed in the Office Action, mailed December 30, 2008, that it is not clear as to what type of fluidity results from the addition of 100 grams of potatoes to 500 mL of water, as disclosed in applicant's specification and applicant's figures 1, 4 and 5, for instance. In any case, as discussed above, it is noted that Christ et al. teaches an aqueous medium comprising a microorganism that is employed for fermenting the material within the fermentation vessel. Hilton et al. teaches the use of an aqueous medium which is added to the uncooked, processed potatoes, for the purpose of fermenting the potatoes. Since Christ et al. teaches that the purpose of recirculating an aqueous medium is to ensure complete contact of the product within the fermentation vessel with the fermentation medium, to employ a larger amount of an aqueous medium, such as that taught by Christ et al., would have been obvious to one having ordinary skill in the art, for the purpose of ensuring complete contact of the food product with the fermentation medium. It is further noted that regardless of the particular amount of the aqueous medium employed by Hilton et al., that the purpose of the medium is to remove the reducing sugar content in the potatoes. Therefore, one having ordinary skill in the art would have been reasonably apprised of amounts of an aqueous fermentation medium that would be required to achieve the desired reduction in the reducing sugar content. Nevertheless, in view of Christ et al. and the references to Hopkins, Young and Pinnegar, who teach the added advantage of recirculating a fermentation medium is to

improve the fermentation rate, it would have been obvious to the ordinary skill artisan to employ an amount of the fermentation medium that can recirculate, for achieving the two-fold advantage of complete contact of the product with the fermentation medium and improved fermentation.

Regarding agitation, it is noted that Hilton et al. teaches that it was advantageous to agitate (i.e. mix) the combination of the food product and the fermentation microorganism for the purpose of allowing the fermentation to progress at a satisfactory rate (column 2, lines 44-47). Nevertheless, Annuk et al. on column 10, lines 52-56 teaches the advantage of mixing during fermentation is to achieve homogeneity in the fermentation. Therefore, the concept of agitating a food product combined with a fermentation medium has been conventionally employed in the art, for the purpose of achieving homogeneity in the fermentation. It would have been obvious to the ordinarily skilled artisan that the agitation facilitates greater contact between the fermentation medium and the food product, and therefore improves the fermentation rates. To therefore agitate the mixture would thus have been obvious to the ordinarily skilled artisan, for this purpose.

13. The declaration filed on May 12, 2009, under 37 C.F.R. 1.131 establishing possession of applicant's invention prior to the publication date of the Amrein reference has been considered. It is noted however, that although applicant may have possessed the claimed invention prior to the publication date of Amrein's publication, the disclosure relied on in the Amrein reference simply evidences the fact that various cultivars of

potatoes have reducing sugar content within applicant's claimed range. That is, in certain circumstances, references cited to show a universal fact need not be available as prior art before applicant's filing date. (See MPEP 2124). Applicant's arguments on pages 13-14 of the response are in further support of the declaration indicating priority of invention, but are not persuasive for the reasons given above.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **VIREN THAKUR** whose telephone number is (571)272-6694. The examiner can normally be reached on Monday through Friday from 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner, Art Unit 1794

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Examiner, Art Unit 1794